

WIND & SAND

Distributed to military and civilian personnel on White Sands Missile Range. Published weekly by Las Cruces Citizen, Las Cruces, N.M., a private firm in no way connected with Department of the Army. Opinions expressed

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White Sands Missile Range, New Mexico, May 31, 1968

WHITE SANDS MISSILE RANGE ENDS FIRST DECADE Became Missile Range in 1958 After Thirteen Years As A Proving Ground



...Commander here since 12 October 1966

General H.G. Davisson

General Horace G. Davisson was born in Ruleville, Miss., on March 25, 1914. He attended Millsaps College in Jackson, Miss., for two years prior to entering the United States Military Academy at West Point from which he was graduated in 1937 as a second lieutenant, Field Artillery. His first assignment was to Fort Sam Houston, San Antonio, with the 15th Field Artillery.

In 1939, he was assigned to Fort Knox, Ky., to join the newly organized 19th Field Artillery and participated in maneuvers at Fort McClellan, Ala., and Fort Benning, Ga. This was followed by an assignment to the Ordnance Department at Aberdeen Proving Ground, Maryland, where he served as a development and proof officer in the Artillery Division. During World War II, General Davisson was executive officer for the Chief of Ordnance, European Theater of Operations, November 1942 to November 1945.

Upon his return to the United States, he was designated executive officer of the Field Service Division and, subsequently, the Research and Development Division of the Office, Chief of Ordnance, Department of the Army, Washington, D. C. In 1949, General Davisson was named Chief, Manufacturing Division of Picatinny Arsenal at Dover, N. J., and during 1951-53, he was Chief of the Procurement Division of the Ordnance Tank-Automotive Center in Detroit, Mich.

Following completion of a one-year course at the Army War College at Carlisle Barracks, Pa., in 1954, he was appointed Ordnance Advisor in the Military Assistance Advisory Group on Taiwan where he served for two years working in close association with the Chinese Nationalist Forces. In 1956, he departed Taiwan to become Commanding Officer of the Anniston Ordnance Depot at Anniston, Ala. In January 1959, he was assigned to Headquarters, United States European Command, Paris, France, as Chief of the Procurement Branch in the Logistics Division. In May 1962, he was named Deputy Director of the Logistics Division at the UAEUCOM Headquarters. In June of 1962 he was named Commanding General of the 1st Logistical Command in Poitiers, France. In August of the same year he assumed command of the 2nd Logistical Command at Fort Lee, Virginia. During the Cuban Crisis of 1962 he was named to organize and command the Peninsula Base Command in Florida.

The general's latest achievement was reorganizing the Eighth U. S. Army Support Command into a COSTAR-- Combat Service Support to the Army--command.

General Davisson served in Korea as Commanding General of the Eighth U. S. Army Support Command from April of 1964 to June of 1966. In June, 1966, he was assigned as Deputy Commanding General of the U. S. Army Weapons Command at Rock Island Arsenal, Ill., and served as Commanding General of that installation during September and October. On 12 October 1966 General Davisson assumed command of White Sands Missile Range.

Within the boundaries of White Sands Missile Range's 4,000 square miles of desert may be found the fusion of the old and new in the military defense of the nation-- from the Indian arrowhead and ancient cannon to the seemingly limitless possi-

bilities of the missiles of today.

Yes, simply said, it's from muskets to missiles.

White Sands Missile Range, one of five national missile ranges, this year is observing the anniversary of one decade as a missile

range after carrying a status of a proving ground for the previous 13 years.

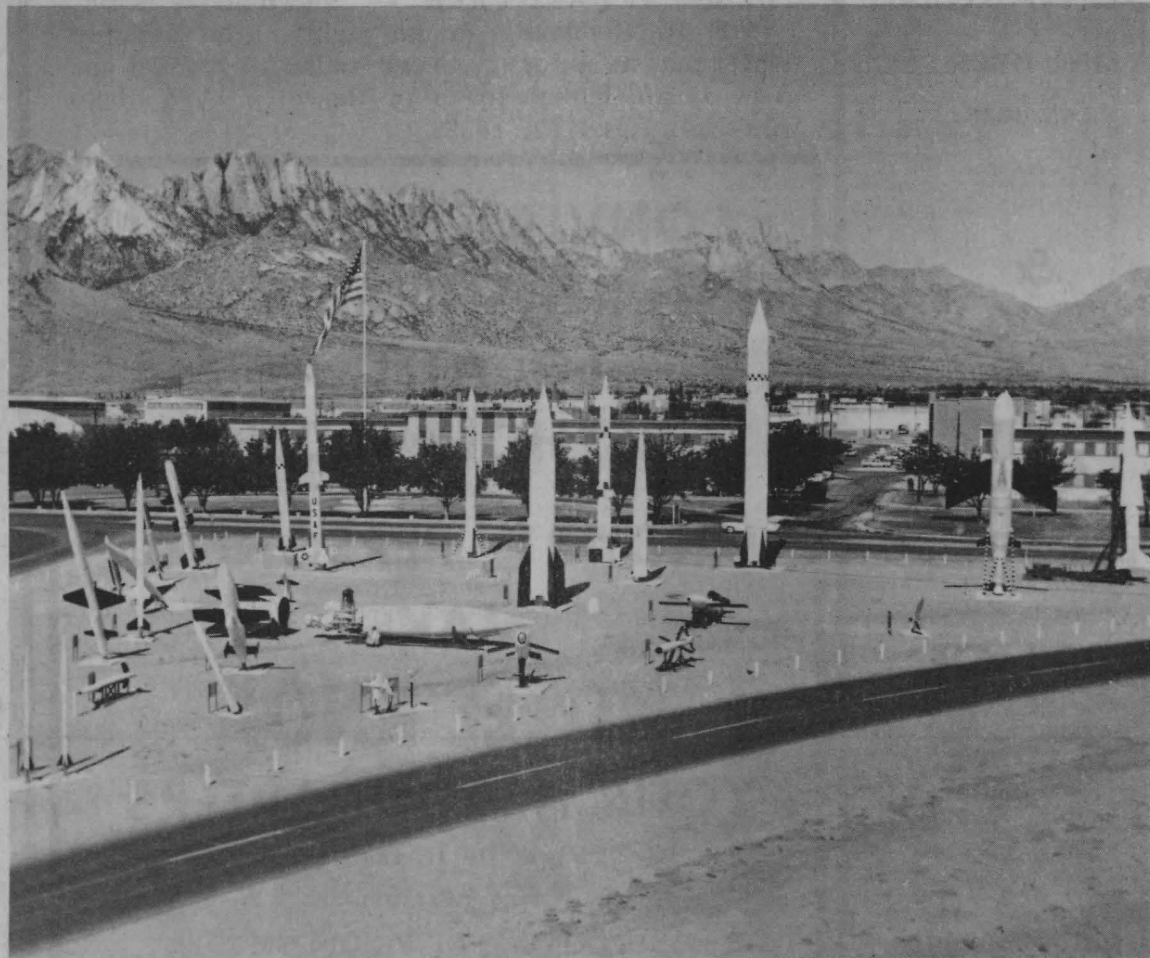
TRINITY SITE

The world's first atomic bomb was successfully tested over what is now the

Continued--



FROM LITTLE ACORNS-- White Sands Missile Range is shown here as it was less than a year after its beginning in 1946. --U.S. Army Photo.



NOW IT'S A BIG OAK -- A view of the White Sands missile park and garrison flag with Headquarters building and Organ Mountains in background. --U.S. Army Photo.

Scars of Historic Blast of July 1945 Are Still Visible at Trinity Site

WHITE SANDS

northern end of White Sands Missile Range. At Trinity Site, about 80 miles up-range, scars of the historic blast are still visible on the desert floor. It was there that the atomic blast of July 16, 1945, began the sequence of events which was to bring Japan to her knees and end World War II.

Set off from a high tower, the explosion was felt in all parts of New Mexico except the northeast and northwest corners, and it caused a flurry of speculation and alarm. At first, many residents thought that a big ammunition arsenal then located near here had exploded. Later an unofficial and unconfirmed story circulated to the effect that a bomb storage igloo had exploded at Alamogordo Army Air Field. Although it failed to satisfy some who believed "something big" had happened, that explanation stood until after the bombing of Hiroshima and Nagasaki.

Trinity Site is within the present 90-mile impact area of the Missile Range, in Socorro County. It was established on the McDonald

Ranch, which at the time formed a part of the Alamogordo Bombing Range. Known originally as the Atomic Bomb Site, the name Trinity Site came into use several years after the war, when State Park officials considered making it a state park.

This site of one of man's most awesome scientific achievements is today closed

to the public and is inaccessible, almost unmarked, and practically forgotten.

It is inaccessible because of its location deep in the heart of White Sands Missile Range.

It is almost unmarked because warning signs have faded and weathered, instrumentation bunkers have been fenced off and become brushfilled, and a circle of

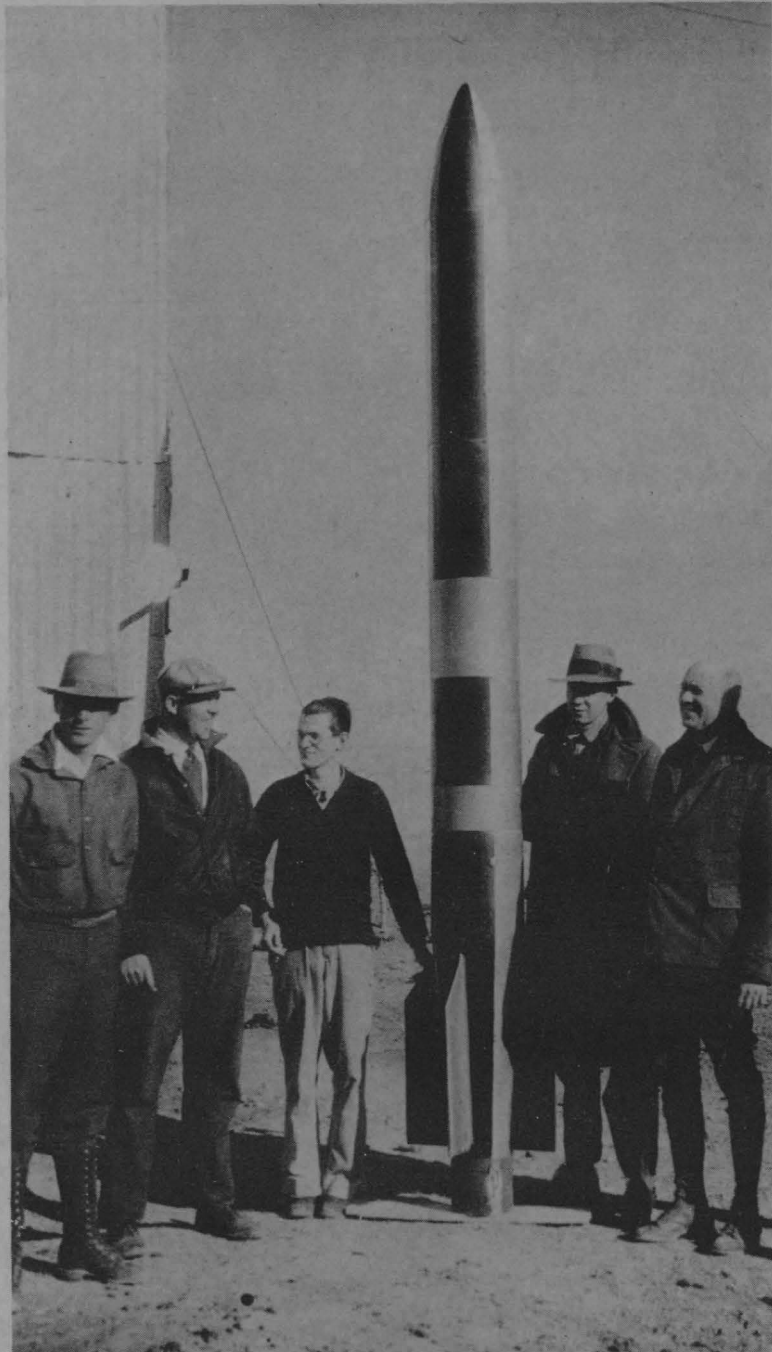
Trinitite--the green glass formed when the bomb's blast fused the desert sands--has crumpled, scattered, and been dozed under.

The site is nearly forgotten, partly because of its location and partly because its one shot at glory has been overshadowed by United

States nuclear tests in Nevada and in the Pacific.

In recent years the site has been "cleaned up" and rotting wooden structures burned. The area has been dozed over and a lava rock monument with plaque has been erected at the site.

Continued--



THE ROCKET AND CREW -- Shown above is Dr. Robert H. Goddard (at far right), the father of American missilery, shown with his rocket and crew at his launch tower in Roswell, N.M. Photo was taken April 19, 1932.

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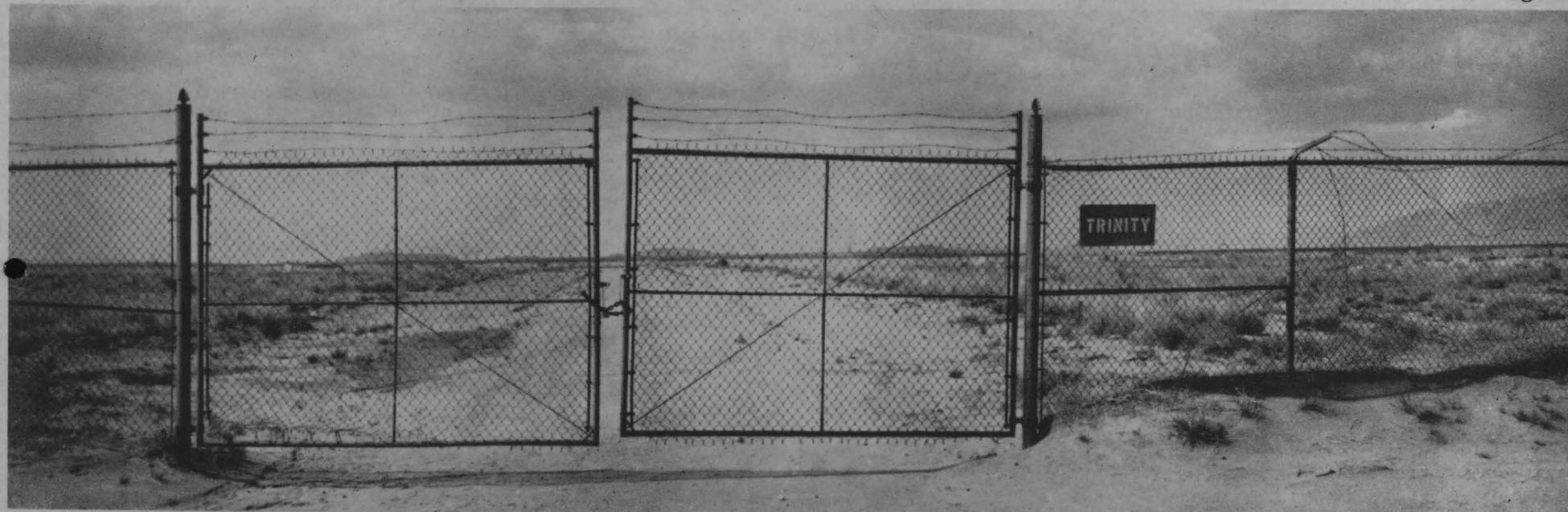
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THIS LONELY SCENE SHOWS THE GATE on the fence which encircles Trinity Site, where the world's first nuclear device was exploded on July 16, 1945, at White Sands Missile Range. (US Army Photograph).

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Is Monument**

WHITE SANDS
NATIONAL MONUMENT

Most of White Sands National Monument -- the world's largest desert of pure white gypsum--stretches into the Missile Range. Some 30 miles northeast of Range Headquarters, the monument is 15 miles from Alamogordo, 54 from Las Cruces, and slightly under 100 from El Paso.

The Monument is some 140,000 acres of glacially white "sand" drifting endlessly in huge dunes. It is almost bare of vegetation.

Several species of reptiles and rodents have developed a bleached coloration which is protective in

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WHITE SANDS

their strange white environment.

The shifting of the sands has laid bare various objects--one an ancient two-wheeled cart of wood, probably an early Spanish carreta.

To the Missile Range the monument has particular importance since it is from the snow-white span of sand that the testing center took its name.

ROADS AND TRAILS

U. S. Route 85, which follows the Rio Grande from El Paso through neighboring Las Cruces and on to Santa Fe, is America's oldest road. It was the Spanish Camino Real, or Royal Road, connecting Mexico City, the capital of New Spain, with Santa Fe, the capital of New Mexico, built in 1610 and said to be the oldest capital in the United States. The road reached New Mexico through the "Pass of

the North," now Ciudad Juarez, Chihuahua, Mexico.

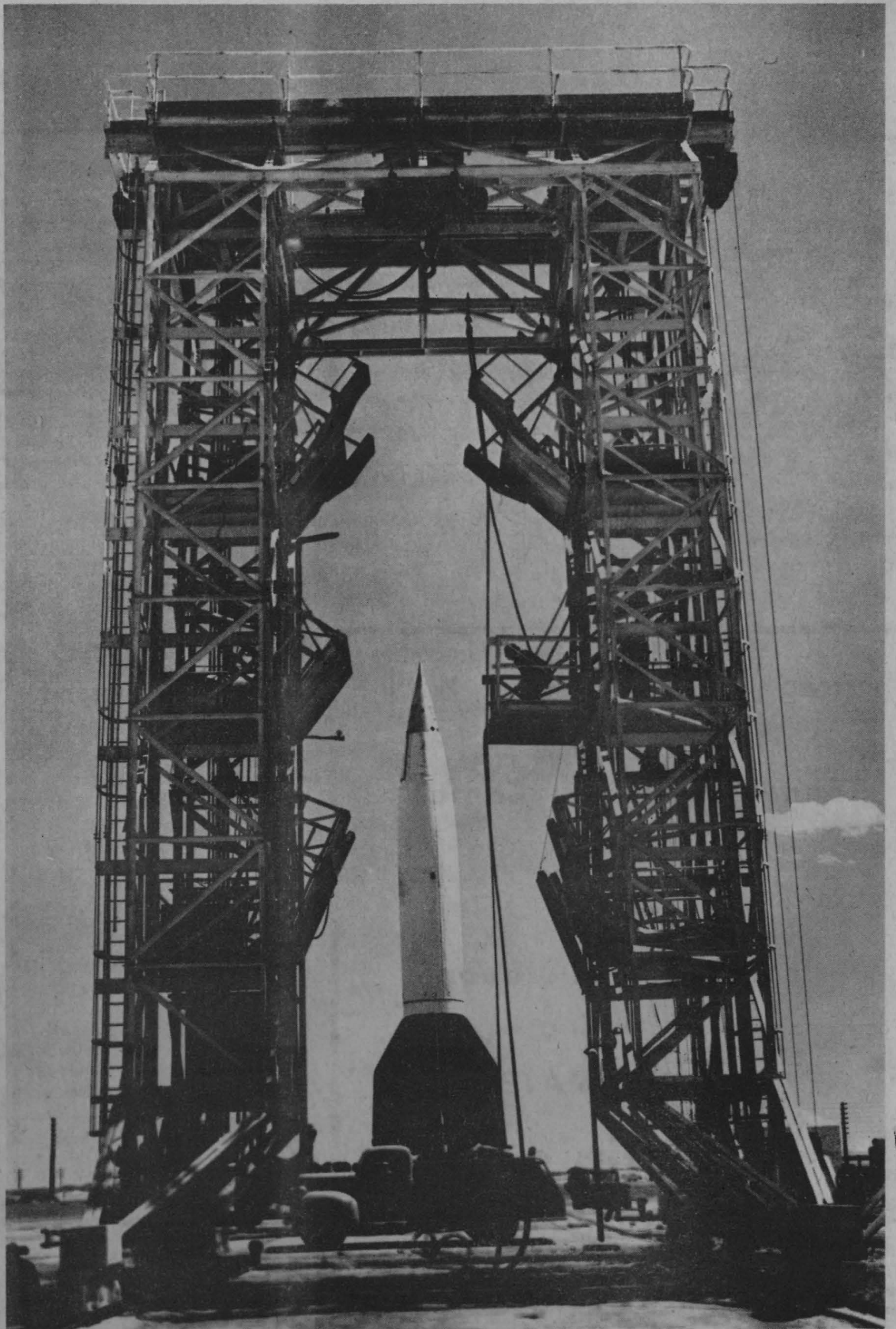
Opened by Friar Rodriguez in 1581, it was followed by Espejo the following year, and Onate led his colonists that way to Santa Fe in 1598. Eighty-two years later, his colonists' decedents returned this way when the Pueblos revolted against Spain in 1680, this time in tragic flight for their lives.

It is said that Cabeza de Vaca, who walked from Florida to California circa 1536, passed through Mesilla, three miles below Las Cruces.

Access to the region from the new United States was by way of the Santa Fe Road, surveyed from Fort Osage, Missouri, to Santa Fe, Mexico, in 1827, with funds supplied by Congress.

In 1846, General Kearny led his Federal troops to Santa Fe over the Sante Fe "trail" and annexed New Mexico bloodlessly as a

Continued--



GERMAN V-2 ROCKET RE-ASSEMBLED -- This V-2 rocket was one of those re-assembled here after World War II. The V-2's were vital to experimental stages of American rocketry development. (Turn to Page 9 for more of the V-2 story.)

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The Malpais Problem

WHITE SANDS territory of the United States.

All of these routes, except the Santa Fe Road, passed through Mesilla. There the Gadsden Purchase treaty was signaled by flagraising in 1845; there a Civil War skirmish was fought; there the CSA established the Confederate soldiers on their return to San Antonio.

The original inn at Mesilla, called "La Posta," the Camino Real post stop, still is in operation.

Oñate led his colonists north across the Jornada del Muerto, translated as "Journey of the Dead." Separated from the Rio Grande by the Caballo and Fra Cristobal Mountains, this 90-mile-long stretch of desert and lava beds is almost waterless. It begins to the immediate northwest of Las Cruces and lies due north across the upper reaches of the Missile Range to below Socorro, bounded

by the San Andres Mountains on the east.

The herds from the Tularosa Valley where the White Sands Missile Range and its principle range installations are installed, were trail-driven on the Old Salt Trail, which led through the Organ Mountains by a pass five miles east of San Augustine Pass, through which U. S. Route 70 now passes. Also known as Baylor's Gap due to a Civil War incident, the pass carried the cattle trail across the mountain barrier and east along a route by the Salt Flats between Carlsbad, New Mexico, and El Paso, Texas.

THE MALPAIS

Both in the Jornada del Muerto and east of the Sierra Oscura Mountains, which continue the San Andres uprange, flanking the 90-mile impact area on both sides, are lava beds of fairly recent geological origin. Broken and ragged, and remain-

ing much as they were aptly described as "rivers" of black basalt." Indian lore tells that the lava beds are the blood and bones of monsters from the Age of the Gods, an era in Indian pre-history during which all living creatures were giants.

The Malpais poses a problem to Missile Recovery teams. Ordinary access is not possible due to the nature of the terrain. Deep crevasses appear to the eye as narrow fissures, and the lips are sometimes crusts of volcanic ash which give way under a man's weight.

Missiles impacting in the lava are sought out by helicopter, which then brings in the recovery crews which harness the missile parts to the chopper, which then carries out parts and crew. U. S. Route 380 passes through one of the lava beds west of Carrizozo.

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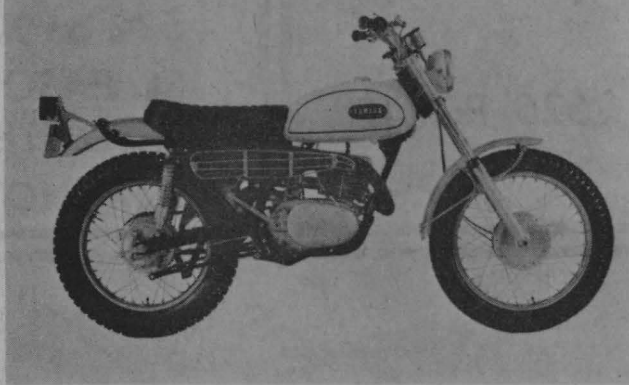
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Inaccessible, Modestly Marked,

The scene of one of man's most awesome scientific achievements is inaccessible, modestly marked and virtually forgotten. This is Trinity Site, birthplace of the atomic age.

indentation.

The concrete instrument bunkers, at three strategic points 10,000 feet from ground zero, are covered with sand, filled with brush and abandoned. This is silent, barren, desolate coun-

try.

Near the monument are two small mounds of dirt. Here two of the four legs of a 100-foot steel tower once stood. Imbedded in concrete footings, the tower legs formed a square

More than two decades after that historic birth, Trinity is giving way to the elements and returning to its former appearance. Physical evidence of the man-made explosion that occurred here in 1945 is gradually disappearing.

The site has been marked with a small monument made of the black lava stones found in the area. This monument is situated on "ground zero"--the exact center of the blast area. It bears a modest inscription: "Trinity Site, Where the World's First Nuclear Device was Exploded on July 16, 1945."

In a remote area of south-central New Mexico, Trinity Site is due west of Carrizozo, the nearest town. The site is well within the boundaries of White Sands Missile Range, largest military reservation in the United States and the nation's only all-land range for testing rockets, guided missiles, space vehicles and related items.

The wide, circular crater carved out of the desert floor by the bomb, originally 10 feet deep at ground zero, has been collecting sand for more than 22 years and now is only a shallow

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measuring nine yards on each side. The other mounds were removed by a bulldozer in 1965 while preparing the site for construction of the monument.

The tower was used to explode the bomb high above ground level. This reduced the amount of dust and sand particles picked up from the desert floor and carried into the atmosphere as radioactive fallout. The tower was vaporized by the explosion, but did serve its purpose.

The site is encircled with more than a mile of high steel cyclone fencing. The double gate on the south side, bearing a weathered sign with the single word "Trinity," is chained and padlocked.

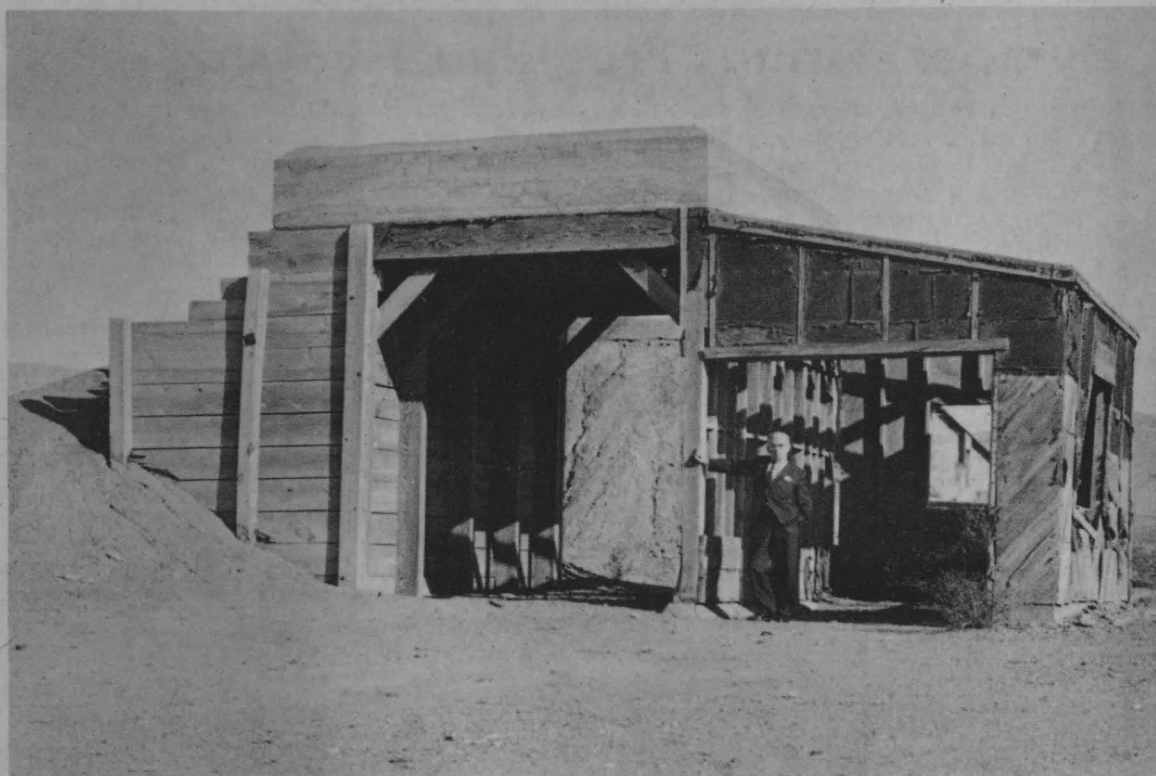
An unpaved road runs to the site from the west, curves to the right along the cyclone fence for a short

distance, then turns south at the padlocked gate.

The instrument bunkers are seen from a distance as large mounds of sand. Closer inspection shows they are pockmarked with prairie dog holes.

On the inside the concrete is reinforced with aging lumber. The bunkers are about six feet by twelve feet in size. The small entrances, three by four feet, are above ground level. Bolt studs around the frames indicate the entrances had tight-fitting covers for the explosion.

In 1945, Los Alamos was a ramshackle, hastily erected frontier village, fenced and guarded. Today a thriving small city, it remains a major site for work of the Atomic Energy Commission. But instead of war weapons, its technicians now are developing peaceful uses for atomic energy.



WILLIAM LAURENCE, FORMER SCIENCE EDITOR of New York Times, recently re-visited Trinity Site, posed, above, at original blockhouse. He was the only reporter permitted on the site to witness the July 1945 atomic explosion, as official War Department reporter. (US Army photograph.)

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'Bumper' Firings Provided Two-stage Rocket Capabilities

Prior to July, 1946, Major General H. N. Toftoy, then colonel, chief of the Research and Development Division, Office of the Chief of Ordnance, suggested the possibility of combining the V-2 rocket and the WAC Corporal. This would provide a two-stage rocket capable of reaching heretofore unattainable altitudes and greatly increase the possibilities of upper atmosphere research.

In October of that year, the Bumper Program was inaugurated. This was a co-

operative program established among the agencies responsible for the various phases of the basic programs. Its purpose was to investigate launching techniques for a two-stage missile and separation of the two stages at high velocity, to conduct limited investigation of high-speed high-altitude phenomena, and to attain velocities and altitudes higher than ever reached.

Thorough study was made of the problems and difficulties to be encountered and

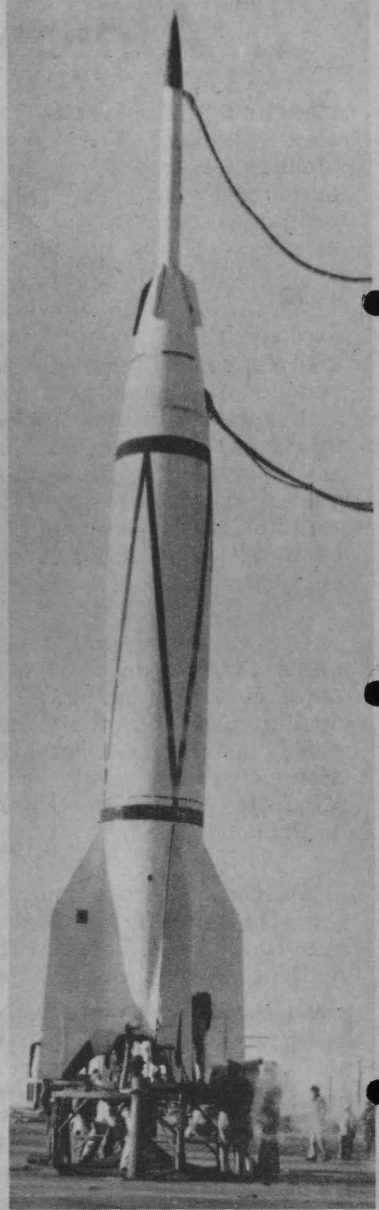
several methods of combining the rockets were investigated. In the design finally decided upon, the powder rocket booster, normally used to launch the WAC Corporal, was dispensed with in order to limit the size of the combination missile and to allow the smaller rocket to fit as deeply as possible into the the V-2 and yet retain enough space in the instrument compartment of the V-2 for housing the indispensable components of the guidance equipment.

Eight of these missiles

were assembled during the Bumper program and the first six were launched at White Sands Proving Ground, N. M. The first Bumper-WAC was fired on May 13, 1948, the first large, two-stage rocket to be launched in the Western Hemisphere. This first combination rocket had a short duration, solid propellant motor propelling the second stage and the WAC attained only slightly more speed and altitude than the V-2. The firing was considered successful in all details. The second Bumper was fired on August 19, 1948, and, like Bumper 1, contained only a partial charge. The velocity of the V-2 was about 10 percent below normal, but the steering was good. Up to 28 seconds the propulsion system was performing normally, but at 33 seconds the turbine started to overspeed. It reached a peak speed of 4,800 rpm a few tenths of a second later, then decreased in the manner typical of an overspeed trip.

On September 30, 1948, the third missile was launched. The second stage used a liquid propellant with 32 seconds burning time. Operation of the V-2 was successful in all aspects; however, the second stage motor exploded just prior to separation. The fourth Bumper, like the third used a liquid propellant with 32 seconds burning time for the second stage. The flight appeared normal in every respect and missile velocity was close to average. A break in the alcohol piping resulted in an explosion in the tail section at 28.5 seconds.

Bumper 5, fired on February 24, 1949, was the first Bumper to be fired with a fully tanked second stage which allowed 45 seconds burning time. This flight was successful in every phase. Thirty seconds after take-off, the V-2 had attained a speed of 3,600 miles per hour and the V-2 and the WAC-Corporal separated. The WAC, with its power added to that of the V-2, attained a speed of

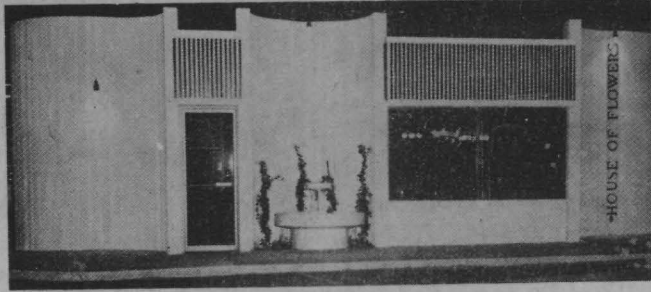


EARLY BUMPER ... showing the V-2 first stage and a WAC CORPORAL second stage in Round NO. 4. (US Army Photograph)

5,150 miles per hour and an altitude of approximately 250 miles, the greatest velocity and the highest altitude ever reached by a man-made object.

The sixth V-2 WAC combination missile to be fired at White Sands Proving Ground was launched on April 21, 1949.

Bumper missiles 7 and 8 were shipped from White Sands Proving Ground to Florida by standard Army tractor and flat bed for firing at the Joint Long-Range Proving Ground.



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Experimental V-2 Work Had High Priority Here

The German V-2 rocket, Hitler's "brain child" of World War II, is the grandfather of America's family of large missiles.

Based on findings made by America's Dr. Robert H. Goddard following World War I, the Germans hit a peak production of V-2's during 1944 and 1945 at Peenemuende, and terrorized Allied populations of Europe and England until the end of the war.

Captured German V-2 parts, components, scientists and specialists were transplanted to this New Mexico desert installation in early 1946 where a development program was set up and given priority second only to atomic research.

Today, though the V-2 is obsolete as a missile, it remains an interest for the scientific minded and general public and holds a prominent place in the American missile family.

V-2s captured in the Euro-

pean Theater of Operations and brought to America served as experimental vehicles at the nation's first missile testing center at White Sands Missile Range, N. M.

A V-2, assembled and launched from WSMR, was America's first rocket to carry a heavy payload to high altitude. A V-2 set the first high altitude and velocity record for a single stage missile, and a V-2 was the first large missile to be controlled in flight.

From a five-year experimental program conducted at WSMR under the supervision of Dr. Wernher Von Braun and the group of German scientists brought to the States in late 1945 and 1946 emerged America's large missiles including the Corporal, Redstone, Nikes, Aerobees and Atlas of today.

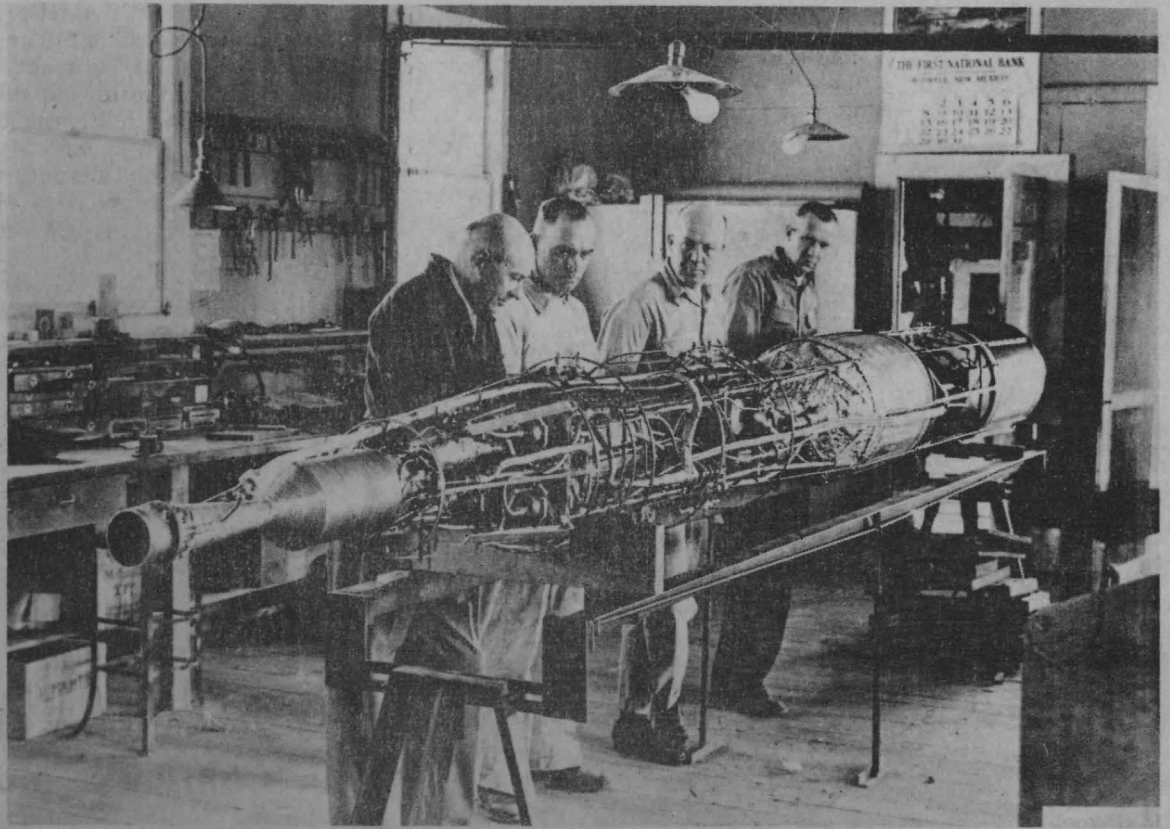
One sunbaked day in August 1945, several train loads of V-2 material and components captured in Europe during WW II were unloaded by military personnel and German specialists in Las Cruces and brought to the east side of the Organ Mountains to the area selected earlier and already in use as the nation's only missile testing ground.

Months later, on March 15, 1946, the first V-2 was static test fired, and on April 16, 1946, the first V-2 was launched from the New Mexico missile range.

By June 30, 1951, a total of 67 metal monsters in V-2 fuselages had been sent aloft over the New Mexico desert in an experimental program that led to the development of the present missile arsenal.

The standard V-2 measured 46 feet in length, 5 1/2 feet in diameter and had a fin span of 11 feet and 8 inches.

A turbopump feed rocket engine with oxygen-alcohol propellant gave the rocket a thrust of 52,000 pounds and carried it to an altitude of 116 miles at 3,500 miles an hour.



THIS IS A 1940 ROCKET ASSEMBLY SHOP ... with Dr. Robert Goddard, at left, 'father of American missilery', checking fuel pumps on uncased rocket. (National Geographic Society Photograph)

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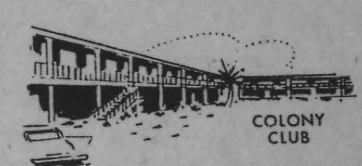
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THE REDSTONE Ballistic Missile is a high accuracy, liquid propelled, surface - to-surface missile capable of transporting nuclear or conventional high explosive warheads against targets at ranges up to approximately 200 miles. It is 69 feet long.

THE REDSTONE was used as the first stage of the composite rocket vehicle called JUPITER C launched by the Army in January, 1958, which successfully orbited the Free World's first earth satellite.

REDSTONE boosters were

also modified and used as launch vehicles by the National Aeronautics and Space Administration to boost American astronauts on their first suborbital space flights during 1961.

TALOS, one of the guided missiles in the BUMBLEBEE Program is primarily a surface - to - air missile, but it can be used effectively against ships and shore - bombardment targets.

TALOS was first fired at sea in February 1959 from USS GALVESTON, a

guided - missile cruiser. Two sister ships and nuclear - powered USS LONG BEACH have also successfully fired TALOS missiles at sea, and three more cruisers are being converted to use this missile system as their principal armament.

SERGEANT is a Field Artillery ballistic missile system that is reliable, rugged, accurate, and mobile.

In 1955, Jet Propulsion Laboratories (JPL), the developing contractor for the CORPORAL, was awarded a contract for the SERGEANT system.

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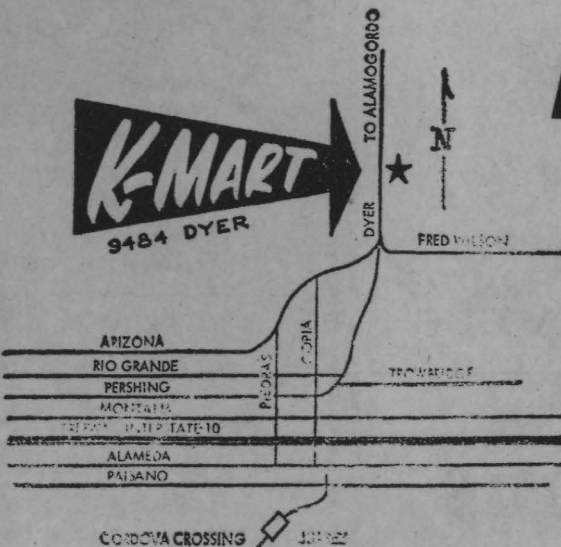
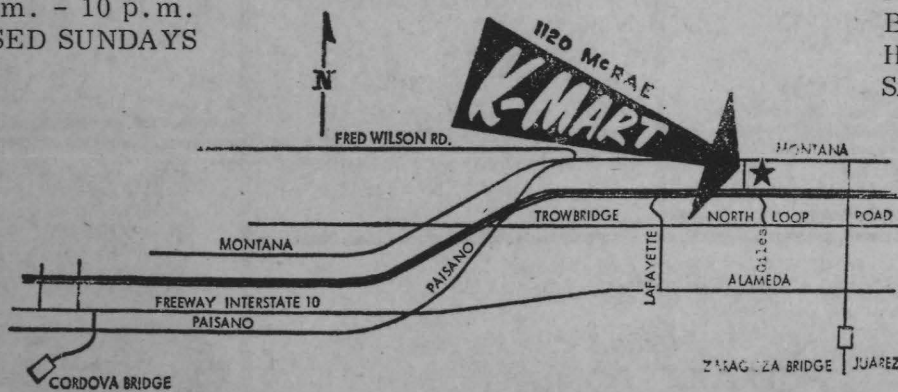
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THE NAME HAWK is formed from the initial letters of "Homing All - The - Way Killer."

The Hawk can search out and destroy attacking high performance aircraft or air-breathing guided missiles at low altitudes.

The HAWK system is transportable and capable of maintaining a high rate of fire. The missile and

its ground equipment, including the battery control center, can be airlifted.

The HAWK ground equipment includes a pulse and a continuous wave acquisition radar, an illuminator radar, a three-missile launcher, a track loader, and the battery control central which is the operations nerve center of the HAWK battery.

The acquisition radar sweeps the HAWK battery's area of defense and when a target is detected, its position is relayed to the illuminator radars. These radars "light" the target with a beam of radio waves which bounce back to a receiver in the HAWK missile. Thus, the missile tracks the target by following this bounced radar beam.

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Hercules And Others...

THE NIKE HERCULES is the United States' primary high altitude air defense weapon in operational status. The weapon has proven successful against high performance aircraft at a variety of altitudes. It has also successfully intercepted short range ballistic missiles and other NIKE HERCULES missiles in tests.

The HERCULES, a second generation missile, possesses greater destructive capability and performance than its predecessor, the NIKE AJAX.

HERCULES ground equipment includes a low power acquisition, a high power acquisition radar, a target tracking radar, a missile tracking radar, electronic and data processing equipment, and remote controlled launchers.

The HERCULES is managed by the Nike Hercules Project Manager, Redstone Arsenal, Ala. The Western Electric Company is the prime contractor.

THE NIKE ZEUS is the only anti-ICBM missile system under advanced development in the Free World.

It is designed for defense against ICBM's and intermediate range ballistic missiles that could be launched against heavily populated areas, industrial centers and strategic military points.

PERSHING is a two-stage solid - propellant ballistic missile, with selective-range capability. The highly mobile, quick reacting system developed as a field army support weapon is to replace the Redstone missile now deployed with Army units.

The Pershing, carrying a nuclear warhead, will extend the Army's ballistic "Sunday punch" to ranges of 400 miles under any weather or terrain conditions.

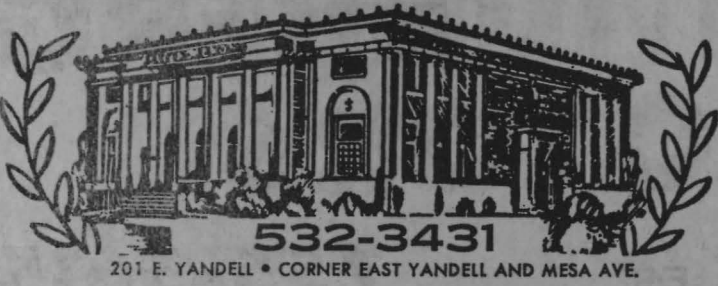
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Honest John And Lance

HONEST JOHN is a long-range artillery rocket and is capable of carrying an atomic or a high explosive warhead. The weapons will be used tactically to provide close fire support in ground combat operations.

HONEST JOHN is a free-flight rocket as distinguished from guided missiles. Having no electronic controls, it is simple in design and simple to operate. Range is equivalent to medium - to - long - range artillery. It has considerably more battlefield mobility than conventional heavy artillery.

The HONEST JOHN system consists of a rocket weighing several tons and a highly mobile self-propelled launcher. It was developed by Army Ordnance. LITTLE JOHN is a 12 1/2-inch rocket, about 14 1/2 feet long, packing explosive power greater than heavy artillery. The system possesses simplicity and reliability and utilizes a solid-propellant rocket engine.

Lightweight launchers and ground equipment are adaptable for an extremely high degree of mobility on the ground and are easily air-lifted.

LITTLE JOHN is operational and was developed by the Army Missile Command, Redstone Arsenal.

LANCE, formerly "Missile B," is a surface ballistic missile which is being designed to provide greater fire support for Army divisions.

Lance will use simplified inertial guidance and its propulsion system will utilize prepackaged storable liquids. The light-weight mobile system is being developed to replace the Lacrosse and Honest John. Lance will complement division tube artillery and will extend the division commander's capability for nuclear and non-nuclear supporting fire.

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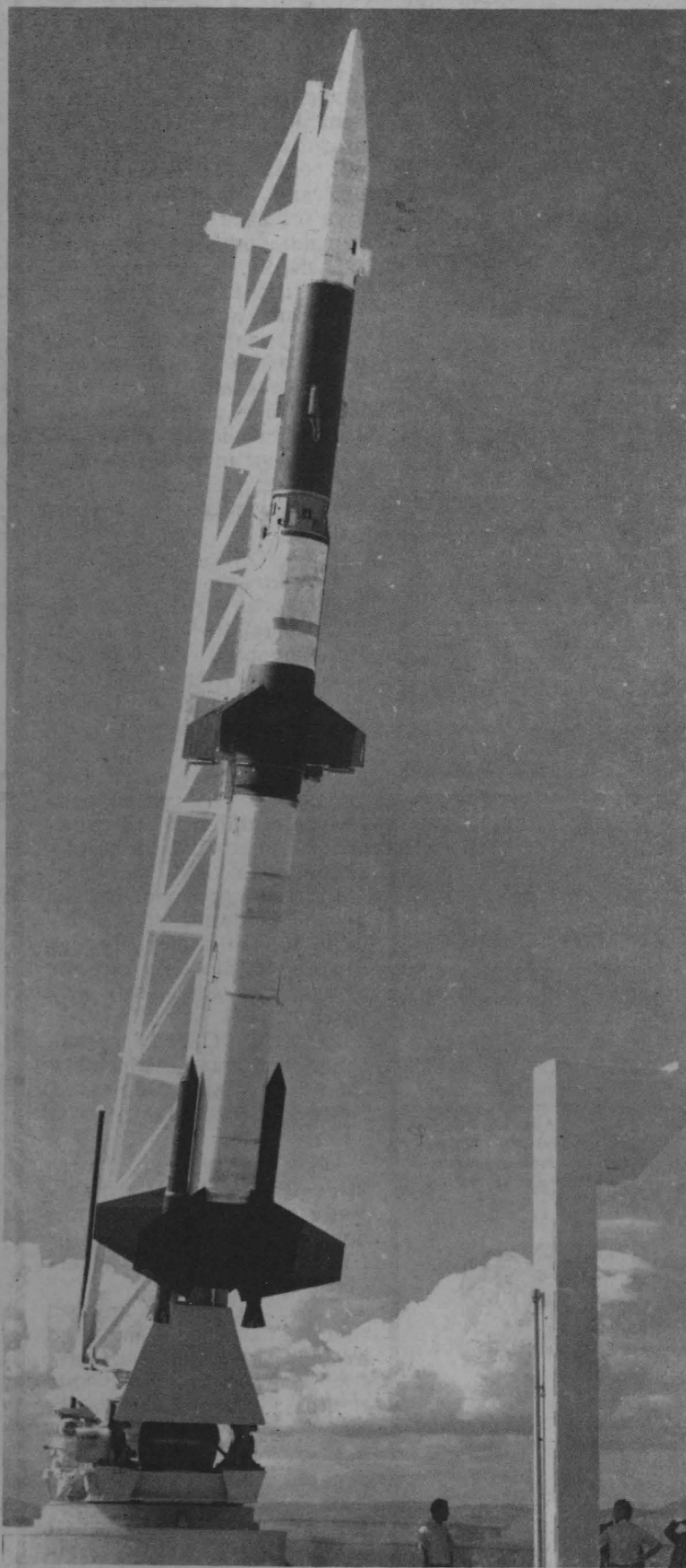
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THE ATHENA ... guardian missile

White Sands Missile Range, one of five national missile ranges, provides flight safety and other support for the Air Force Advanced Ballistics Re-entry System (ABRES) program.

Green River, Utah, is the launch site for the Athena program. This complex was established for White Sands Missile Range and its user, the Air Force Ballistic Systems Division (BSD), by the Army Corps of Engineers, Sacramento District. The test complex, valued at more than \$7.7 million, includes 15,590 acres of land.

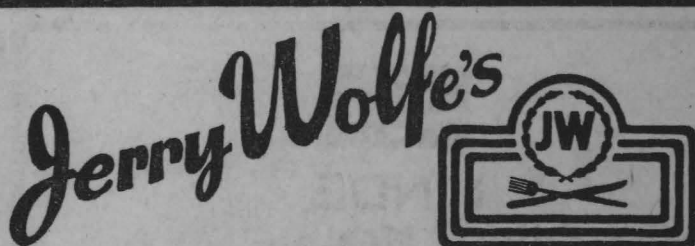
Because Athena is a temporary program, many of the structures at the Green River Test Complex (GRTC) are pre-fabricated metal buildings and special-purpose trailers.) The Athena program currently is expected to be completed by calendar year 1969.)

The GRTC headquarters area includes office space, a fire station, mess hall, telephone exchange, housing for some of the program's personnel, and technical buildings of the Atlantic Research Corporation, prime

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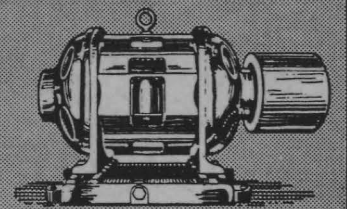
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Approximately five miles southeast, between the headquarters area and launch site, is the instrumentation area with its radar, telemetry, optical, frequency monitoring equipment, and meteorological instruments.

Meteorological data on high altitude winds is used by technicians in determining launcher position settings prior to firings.

Athena firings require certain support functions which are provided by White Sands Missile Range. Chief among these is evacuation of residents in four land tracts along the 450-plus mile flight path. Residents of the areas to be evacuated have been most cooperative in this temporary use of their lands. This same cooperation is evident at the few roadblocks necessary on highways near certain impact areas. These brief

blocks are established when necessary and always with the cooperation of local law enforcement agencies.

The down-range areas used as impact tracts and evacuated as needed are: 424 square miles southwest of Moab, Utah, with about 30 residents; 1,318 square miles around Datil, New Mexico, with about 750 residents; 926 square miles bordering the range's western boundary with about 80 residents; and 62 square miles on the range's eastern boundary with a population of about 25 persons.

Athena firings add considerably to the range's workload with an average of three firings per month, mostly at night. More specialized instruments are required for the Athena than for most missiles tested.

WSMR also provides: re-entry data gathering instruments, data processing of trajectory and missile per-

formance, surveys of instruments and recovered items, timing to correlate instrumentation, logistics and calibration, and ground and flight safety.

During the Athena's flight, White Sands Missile Range instruments accurately determine its position. All data is fed into a central computer system at the range where it is used to compute such things as missile guidance corrections and impact predictions for safety monitoring purposes.

The predictions and associated data allow range

flight safety personnel to decide whether the missile in flight is performing, or, if it is not, when the flight would be terminated to impact the missile into one of the pre-selected safety areas.

The range's support services end when a final data report is submitted to the Air Force. Filmed, taped and chart records are kept on each flight.

The complex operations leading to this final report are important milestones to White Sands Missile Range because the demonstrated

ability to support such a program opens a new era in the range's service to the nation.

THE MAULER is being developed as a highly mobile system capable of rapid engagement of enemy aircraft and missiles while traveling with frontline troops. It will deliver its radar-guided, solid fuel missiles while on the move. Its track-mounted fire unit will be capable of fording rivers.

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